

turning on a switch unit to supply a first power supply voltage to said semiconductor circuit component;

A5 supplying a second power supply voltage to a control signal supply circuit only when said switch unit is turned on, the second power supply voltage is supplied to make the control signal supply circuit output a control signal;

supplying the control signal the load-control semiconductor switching device; and switching power to a load based on the control signal. --

REMARKS

Claims 1-15 are pending in this application. By this Amendment, the Title, the Abstract, the specification and claims 1-3, 9-13 are amended, and claims 14 and 15 are added. The amendments to the claims are for clarification, to overcome the 35 U.S.C. §112, second paragraph rejections, and not to distinguish over any applied art. Applicants appreciate the indication that claims 4 and 9-13 contain allowable subject matter. Claims 1-3, 9-13 are amended to overcome the rejection under 35 U.S.C. §112, second paragraph, thereby placing claims 4, and 9-13 in condition for allowance. The Title and Abstract are amended to obviate the objections. The specification is amended to correct minor spelling errors. Claims 14 and 15 are added to recite additional subject matter. No new matter is added. Reconsideration of the rejections of claims 1-13 in view of the above amendments and following remarks is respectfully requested.

The attached Appendix includes marked-up copies of each rewritten paragraph (37 C.F.R. §1.121(b)(1)(iii)) and claim (37 C.F.R. §1.121(c)(1)(ii)).

The Office Action objects to Figs. 6-9. Figs. 6-9 are amended to obviate the objection. In particular, the words "Prior Art" have been added after the figure number. Applicants therefore request that the objection to the drawings be withdrawn.

The Office Action rejects claims 1-13 under 35 U.S.C. §112, second paragraph.

Claims 1-3 and 9-13 are amended to overcome the rejection.

The Office Action asserts that the recitation in claim 1, to supply a power supply voltage to the semiconductor circuit when an external switch is turned on, is misdescriptive of Fig. 1. The objection is traversed.

The recitation that a first power supply is supplied to the semiconductor circuit component when an external switch is turned on, does not preclude other power supply voltages from being applied to the semiconductor circuit component, as for example at node 18 in Fig. 1. Therefore, Applicants submit that the preamble is not misdescriptive of Fig. 1.

Claims 1-3 and 9-13 are amended to obviate the rejection under 35 U.S.C. §112, second paragraph. Applicants therefore respectfully request that the rejection of claims 1-13 be withdrawn.

The Office Action rejects claims 1-3 and 5-8 under 35 U.S.C. §102(b) over Sicard et al. (U.S. Patent No. 4,928,053). The rejection is respectfully traversed.

The Office Action asserts that Sicard discloses all of the features recited in claim 1.

However, claim 1 recites "when said switch unit is turned on, a second power supply voltage is supplied from said drive control circuit to said control signal supply circuit to make said control signal supply circuit output the control signal" (emphasis added).

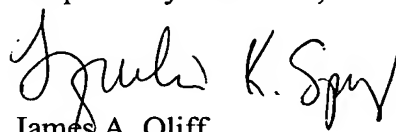
Sicard discloses applying a logic signal, not a power supply voltage, to the control circuit. See col. 3, lines 22-27, 55-57 and col. 4, lines 9-13. As is well known in the art, a logic signal is not a power supply voltage.

Therefore, Sicard does not disclose the second power supply voltage recited in claim 1, and claims 2-3 and 5-8 depending therefrom. Applicants therefore respectfully request that the rejection of claims 1-3 and 5-8 be withdrawn.

In view of the foregoing, Applicants submit that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-15 are earnestly solicited.

Should the Examiner believe that anything further is desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact Applicants' attorney at the telephone number listed below.

Respectfully submitted,



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Attachment:

Appendix

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<p>DEPOSIT ACCOUNT USE AUTHORIZATION Please grant any extension necessary for entry; Charge any fee due to our Deposit Account No. 15-0461</p>
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ABSTRACT

A⁶ A circuit component includes a MOS-FET 12 which is a load-control semiconductor switching device with a control terminal; a control signal supply circuit 14 including a charging pump circuit for supplying a control signal to a gate G of the MOS-FET 12 to drive the MOS-FET 12; and a drive control circuit 16 for performing drive control only when a switch unit SW externally provided is turned on, so that a power supply voltage is supplied from a battery power supply to the control signal supply circuit 14 to thereby make the control signal supply circuit 14 output the control signal.

Changes to Title:



The following is a marked-up version of the amended title:

SEMICONDUCTOR CIRCUIT COMPONENTS FOR SUPPLYING POWER TO A LOAD

Changes to Abstract:

The following is a marked-up version of the amended Abstract.

A ~~semiconductor~~ circuit component ~~has~~ includes a MOS-FET 12 which is a load-control semiconductor switching device with a control terminal; a control signal supply circuit 14 including a charge pump circuit for supplying a control signal to a gate G of the MOS-FET 12 to drive the MOS-FET 12; and a drive control circuit 16 for performing drive control only when a switch unit SW externally provided is turned on, so that a power supply voltage is supplied from a battery power supply to the control signal supply circuit 14 to thereby make the control signal supply circuit 14 output the control signal.

Changes to Specification:

Please amend paragraph [0002] as follows:

A mechanical relay has been heretofore mainly used for the ON/OFF control of a power supply voltage supplied to an on-vehicle electrical component. That is, as shown in Fig. 6, a mechanical relay 101 has a relay coil 102, and relay contacts 103. One terminal T1 of the relay coil 102 is connected to a +B terminal of a ~~battery~~ battery power supply through a switch 104 while the other terminal T2 of the relay coil 102 is grounded. A terminal T3 of corresponding one of the relay contacts 103 is connected to the one terminal T1 of the relay coil 102 while a terminal T4 of the other of the relay contacts 103 is connected to one end of a load L 105 which has its other end grounded. In this relay circuit, when the power supply side switch 104 is turned on, the relay contacts 103 are closed to drive the load 105.

Please amend paragraph [0003] as follows:

There is another case where, as shown in Fig. 7, the one terminal T1 of the relay coil 102 is connected to the +B terminal of the ~~battery~~battery power supply while the other terminal T2 of the relay coil 102 is grounded through a switch 106. Incidentally, the connection of the terminals T3 and T4 of the relay contacts 103 is the same as shown in Fig. 6. In this relay circuit, when the ground side switch 106 is turned on, the relay contacts 103 are closed to drive the load 105.

Please amend paragraph [0004] as follows:

There is a further case where, as shown in Fig. 8, the one terminal T1 of the relay coil 102 is connected to the +B terminal of the ~~battery~~battery power supply through a switch 107 while the other terminal T2 of the relay coil 102 is grounded through a switch 108. Also in this case, the connection of the terminals T3 and T4 of the relay contacts 103 is the same as shown in Fig. 6. In this relay circuit, when the power supply side switch 107 and the ground side switch 108 are turned on simultaneously, the relay contacts 103 are closed to drive the load 105. Incidentally, any one of the relay circuits is formed by mounting the mechanical relay 101 on bus bar terminals of a bus bar circuit board received in an electric connection box.

Changes to Claims:

The following are marked-up versions of the amended claims:

1. (Amended) A semiconductor circuit component capable of being driven when an externally provided switch unit is turned on to supply a first power supply voltage to said semiconductor circuit component,

said semiconductor circuit component comprising:

a load-control semiconductor switching device with a control terminal;

a control signal supply circuit for supplying a control signal to said control terminal of said load-control semiconductor switching device to drive said load-control semiconductor switching device; and

a drive control circuit for controlling ~~drive~~ the control signal supply circuit in a manner so that, only when said switch unit is turned on, a second power supply voltage is supplied from said drive control circuit to said control signal supply circuit to make said control signal supply circuit output the control signal.

2. (Amended) The semiconductor circuit component according to claim 1, wherein

said drive control circuit is disposed between the first and the second power supply voltages ~~a power supply and a ground~~ and in series with said switch unit, so that only when said switch unit is turned on, the second power supply voltage is supplied from said drive control circuit to said control signal supply circuit.

3. (Amended) The semiconductor circuit component according to claim 2, wherein

said drive control circuit comprises:

a drive-control semiconductor switching device with a control terminal; and

a voltage supply circuit for supplying a drive voltage to said control terminal of said drive-control semiconductor switching device when said switch unit is turned on and the first ~~a power supply voltage having a rated value~~ is supplied to said voltage supply circuit, and wherein

said drive-control semiconductor switching device performs drive control so that the second power supply voltage is supplied from said drive-control semiconductor switching device to said control signal supply circuit when the drive voltage is supplied to said drive-

control semiconductor switching device from said voltage supply circuit to drive said drive-control semiconductor switching device.

9. (Amended) The semiconductor circuit component according to claim 1, wherein

said drive control circuit has first and second drive control circuits, and

said switch unit has first and second switch units, and wherein

said first drive control circuit is connected in series with said first switch unit between the first and second said power supply voltages ~~and the ground~~,

said second drive control circuit is connected in series with said second switch unit between said first and second power supply voltages ~~and the ground~~,

so that only when said first and second switch units are turned on, at least one of the first and second said power supply voltage-voltages is supplied from said drive control circuit to said control signal supply circuit.

10. (Amended) The semiconductor circuit component according to claim 9, wherein

said first drive control circuit comprises:

a first drive-control semiconductor switching device with a control terminal, and

a first voltage supply circuit for supplying a drive voltage to said control terminal of said first drive-control semiconductor switching device, upon turning on said first switch unit ~~on~~, by supplying a one of the first and second power supply voltage-voltages ~~having a rated value~~ to said first voltage supply circuit,

said second drive control circuit comprises:

a second drive-control semiconductor switching device with a control terminal, and

a second voltage supply circuit for supplying a drive voltage to said control terminal of said second drive-control semiconductor switching device, upon turning on said second

switch unit ~~on~~, by supplying another one of the first and second ~~a~~ power supply ~~voltage-~~
~~voltages having a rated value~~ to said second voltage supply circuit, and wherein

when said first and second drive-control semiconductor switching devices are supplied with drive voltages from said first and second voltage supply circuits respectively-
~~and driven~~, the first and second ~~power supply voltage-voltages are~~ is supplied from said first and second drive-control semiconductor switching devices to said control signal supply circuit.

11. (Amended) The semiconductor circuit component according to claim 10, wherein

said first voltage supply circuit comprises:

a first voltage dividing circuit for dividing the ~~power supply voltage~~ one of the first and second power supply voltages supplied through said first switch unit, and

a first voltage suppressing circuit for suppressing a partial voltage into a predetermined value, the partial voltage being obtained by said first voltage dividing circuit; and

said second voltage supply circuit comprises:

a second voltage dividing circuit for dividing the ~~power supply voltage~~ other of the first and second power supply voltages supplied through said second switch unit, and

a second voltage suppressing circuit for suppressing a partial voltage into a predetermined value, the partial voltage being obtained by said second voltage dividing circuit.

12. (Amended) The semiconductor circuit component according to claim 10, wherein

said first drive-control semiconductor switching device is formed to have one end connected to a ground end of said control signal supply circuit while said ground end is

~~grounded-connected~~ through the other end of said first drive-control semiconductor switching device to one of the first and the second power supply voltages, and

said second drive-control semiconductor switching device is formed to have one end connected to a power input end of said control signal supply circuit while said power input end is connected to ~~said~~ an other one of the first and second power supply voltages through the other end of said second drive-control semiconductor switching device,

so that when a drive voltage is supplied from said first voltage supply circuit to said first drive-control semiconductor switching device to drive said first drive-control semiconductor switching device,

and when a drive voltage is supplied from said second voltage supply circuit to said second drive-control semiconductor switching device to drive said second drive-control semiconductor switching device,

the first and second power supply voltage-voltages are ~~is~~ supplied from said first and second drive-control semiconductor switching devices to said control signal supply circuit.

13. (Amended) The semiconductor circuit component according to claim 12, further comprising:

a first externally leading-out terminal connected to a power input end of said first voltage supply circuit while connected to ~~said power supply~~ one of said first and second power supply voltages through said first switch unit;

a second externally leading-out terminal connected to a ground end of said second voltage supply circuit while connected to ~~the ground~~ an other one of said first and second power supply voltages through said second switch unit;

a third externally leading-out terminal connected to the other end of said second drive-control semiconductor switching device and to one end of said load-control

semiconductor switching device while connected to ~~said power supply~~ the one of the first and second power supply voltages;

a fourth externally leading-out terminal connected to the other end of said load-control semiconductor switching device while connected to said load; and

a fifth externally leading-out terminal connected to the other end of said first drive-control semiconductor switching device while connected to the ground.